



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/746,102	12/21/2000	Dennis Lee Doane	TI-23064	2206

23494 7590 10/07/2003

TEXAS INSTRUMENTS INCORPORATED  
P O BOX 655474, M/S 3999  
DALLAS, TX 75265

EXAMINER
----------

DESIRE, GREGORY M

ART UNIT	PAPER NUMBER
----------	--------------

2625

DATE MAILED: 10/07/2003

5

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/746,102

Applicant(s)

DOANE, DENNIS LEE

Examiner

Gregory M. Desire

Art Unit

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 December 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☒ Claim(s) 11-13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al (6,310,650) in view of Yonemitsu et al (5,485,279).

Regarding method claims 1 and 7 Johnson discloses,

Building a reference surface correction image (the instant application builds reference image using bilinear interpolation in fig. 4. Johnson also performs bilinear interpolation to form corresponding image (note fig.9; block 226).

Capturing a test image (note fig. 8 block 202);

Correcting said test image to remove DMD mirror tilt angle non-uniformities from said test image, further correcting said test image to remove system illumination and optics non-uniformities from said test image (note fig. 8 block 206, the examiner interprets non-desirable characteristic as non-uniformities, captured image identifies transformation function to correct and remove non-uniformities);

Multiplying said test image by said correction reference image to produce a low spatial uniformity result image (instant application cites this step performs flattening of surface fig. 4 step 4, Johnson col. 18 lines 35-40, selects flatten field image from algorithm entered); and

Johnson is silent disclosing extracting low frequency non-uniformity defect data from the result image. However, Yonemitsu discloses extracting low frequency non-uniformity defect data from the result image (note col. 14 lines 35-40).

Therefore it would have been obvious to one having ordinary skills in the art to include extracting low frequency non-uniformity defect data from the result image in the system of Johnson as disclosed by Yonemitsu. Johnson provides image data. Yonemitsu in the same field of endeavor extracts low frequency components alleviating noise and the degradation of image quality (note col. 12 lines 50-54).

Regarding claim 2 Johnson and Yonemitsu discloses,

Stepping a small 50x50 pixel region of DMD mirrors having constant reflectivity from point to point in a grid pattern over the field of view of the test DMD (note col. 5 lines 32-40);

Recording the intensity data at each of said points in said grid pattern (col. 5 lines 42-45);

Performing a bi-directional interpolation between said grid points in two dimensions over image to provide said reference surface correction image (note col. 13 lines 23-25).

Regarding claims 3 and 8 Johnson and Yonemitsu discloses,

Capturing said test image in smaller frames (note col. 6 lines 58-59);

Removing high spatial non-uniformity components using a 21x21 pixel-smoothing filter (note col. 7 lines 1-8);  
Stitching said frames together to form a full size test image (note col. 9 lines 10-15, overlapping regions); and  
Taking average of said frames to remove said stitched image boundary discontinuities.

Regarding claims 4 and 9 Johnson and Yonemitsu discloses

+/-20 degree illumination relative to 0 DMD mirror tilt angle (note col.5 lines 55-57);

Regarding method claim 5 Johnson and Yonemitsu discloses,

High spatial frequency defects (note col. 7 lines 5-7);  
Stitched frame boundary discontinuities (note col. 7 lines 20-25);  
DMD mirror tilt angle non-uniformities (note col. 5 lines 56-61);

Regarding method claim 6 Johnson and Yonemitsu discloses,

Said result image is flattened (note fig. 19, block 400);  
Said result image consists essentially of data representing the DND mirror reflectivity non-uniformities (note col. 5 lines 59-61 and col. 7 lines 5-8).

***Allowable Subject Matter***

3. Claims 10-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
4. The following is a statement of reasons for the indication of allowable subject matter: Regarding claim 10, the prior art fails to teach correction reference surface provide a representative image, using image data to generate a second order equation and second order variations. Claims 11-13 are dependent on claim 10.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory M. Desire whose telephone number is (703) 308-9586. The examiner can normally be reached on M-F (8:30-6:00) Second Monday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (703) 308-5246. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

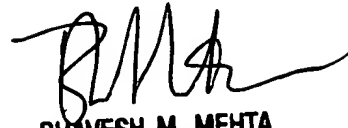
Gregory M. Desire

Application/Control Number: 09/746,102  
Art Unit: 2625

Page 6

G.D.  
September 24, 2003

Examiner  
Art Unit 2625

A handwritten signature in black ink, appearing to read 'BMA', with a long horizontal flourish extending to the right.

**BHAVESH M. MEHTA**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2600**